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10/581,036	05/30/2006	Yoshito Shimizu	L9289.06162	6003

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Dickinson Wright PLLC
James E. Ledbetter, Esq.
International Square
1875 Eye Street, N.W., Suite 1200
Washington, DC 20006

EXAMINER	
PHAM, TIMOTHY X	
ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,036	SHIMIZU ET AL.	
	Examiner	Art Unit	
	TIMOTHY PHAM	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-10 have been cancelled; claims 11-20 are newly added. Claims 11-20 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 11-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11-12, 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akamine et al. (hereinafter "Akamine"; US 2004/0121746) in view of Anim-Appiah (US 2004/0100898; Cited in PTO-892 Part of Paper No. 20090522).

Regarding claims 11, 17 and 19, Akamine discloses a direct conversion reception apparatus, a direct conversion reception method, and a semiconductor integrated circuit apparatus in a direct conversion reception apparatus for use in a system where transmit power varies between transmission signals by downlink transmit power control, the apparatus comprising:

a reception quality measurement section that finds reception quality of a signal of a frame that is comprised of a plurality of time slots (paragraphs [0009], [0035], e.g., a certain time

period (a few microseconds) is required to cancel the DC offset) and has been received earlier, the reception quality being found on a per time slot basis (paragraphs [0051]-[0052]);

a gain control section that selects a maximum gain in a same frame (paragraphs [0042], [0045], [0053], e.g., that calibration was performed only once at the start of receiving with the gain control amplifiers being set at their maximum gains (with the minimum receive level)), from the gains of individual time slots estimated in the gain estimation section (paragraphs [0040]-[0041]), and, using the gains of individual time slots, performs gain control during the reception period of the frame that is going to be received, on a per time slot basis (paragraph [0035], e.g.., the convergence time to be required to cancel the DC offset can be shorten); and

a voltage calibration section that calibrates an offset voltage of the signal of the frame that is going to be received, on a per frame basis, before the reception period of the frame that is going to be received, using a calibration value matching the maximum gain selected in the gain control section (paragraphs [0045], [0053], e.g., the gain control amplifiers were configured, according to the arrangement of the gain control amplifier circuit 60 shown in FIG. 6 and a characteristic line II denotes the DC offset characteristic when the gain control amplifiers were configured, according to the arrangement of the gain control amplifier circuit 70 shown in FIG. 7. It is assumed that calibration was performed only once at the start of receiving with the gain control amplifiers 104A to 104C being set at their maximum gains).

Akamine fails to specifically disclose a gain estimation section that estimates, based on the reception quality of individual time slots found in the reception quality measurement section, gains for amplifying a signal of a frame that is going to be received, to a predetermined reference

value, before a reception period of the signal that is going to be received, the gains being estimated on a per time slot basis .

However, Anim-Appiah discloses a gain estimation section (Abstract; paragraph [0013]) that estimates, based on the reception quality of individual time slots found in the reception quality measurement section, gains for amplifying a signal of a frame that is going to be received, to a predetermined reference value, before a reception period of the signal that is going to be received, the gains being estimated on a per time slot basis (paragraphs [0013], [0015], [0017], [0020], [0028], [0031], [0034], [0036], [0045], e.g., The RF processor couples to the baseband processor to receive the variable gain control setting V_{AGC} during the processing the preamble of each packet to provide a partially demodulated signal y(t) of constant energy. Further, the baseband processor calculates the gain estimation h_i of each sub-channel and calculates the noise-plus-interference power P_{ni}).

Therefore, taking the teachings of Akamine in combination of Anim-Appiah as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention by applicant to estimate gains for amplifying a signal in order to maintain output power over a wide input dynamic range.

Regarding claims 12, 18, and 20, Akamine in combination with Anim-Appiah discloses the reception apparatus, the direct conversion reception method, and the semiconductor integrated circuit apparatus in a direct conversion reception apparatus according to claims 11, 17, and 19 respectively, wherein:

the reception quality measurement section (Anim-Appiah: Fig. 1, reference 134) finds a reception field intensity that serves as a control reference in transmit power control for time slots, from the reception quality of individual time slots (Anim-Appiah: paragraph [0028], [0034]); and

the gain estimation section estimates the reception field intensities of individual time slots of the frame that is going to be received ((Anim-Appiah: paragraphs [0031], [0034], [0036], [0039], e.g., baseband processor 116 measures the power of the signal received, calculates the gain estimation), from the reception field intensity and transmit power information of individual time slots of the frame that has been received earlier, the transmit power information being included in demodulated data of the frame that has been received earlier, and estimates the gains of individual time slots according to the reception field intensities of the time slots of the frame that is going to be received (Anim-Appiah: paragraphs [0030]-[0031], [0034], note that the signal y(t) is sampled and quantized to yield the discrete time).

Therefore, taking the teachings of Akamine in combination of Anim-Appiah as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention by applicant to the reception quality measurement section finds a reception field intensity that serves as a control reference in transmit power control for time slots, from the reception quality of individual time slots; and the gain estimation section estimates the reception field intensities of individual time slots of the frame that is going to be received, from the reception field intensity and transmit power information of individual time slots of the frame that has been received earlier, the transmit power information being included in demodulated data of the frame that has been received earlier, and estimates the gains of individual time slots according to the

reception field intensities of the time slots of the frame that is going to be received for advantages of implementing the analog to digital converter.

Regarding claim 15, Akamine in combination with Anim-Appiah discloses the reception apparatus according to claim 12, wherein the gain estimation section subtracts increment and decrement values of transmit power indicated in the transmit power information from the reception field intensity on a per time slot basis (Anim-Appiah: paragraph [0019]) and estimates transmit powers of individual time slots (Akamine: paragraphs [0043], [0048]), and estimates the gains of individual time slots for amplifying a received signal of an estimated transmit power to the predetermined reference value (Anim-Appiah: paragraph [0019]; claim 11, note equation [3]).

Therefore, taking the teachings of Akamine in combination of Anim-Appiah and Itoh as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention by applicant to subtract increment and decrement values of transmit power indicated in the transmit power information from the reception field intensity on a per time slot basis and to estimate the gains of individual time slots for amplifying a received signal of an estimated transmit power to the predetermined reference value for advantages of controlling output power saturation which occurs between each amplification.

Regarding claim 16, Akamine in combination with Anim-Appiah discloses the reception apparatus according to claim 12, wherein:

the gain estimation section sequentially sets the gains for amplifying a received signal to the predetermined reference value through a plurality of stages (Akamine: Abstract; paragraphs [0032], [0041], e.g., FIG. 11 shows a power level diagram, supposing that an amplifier 104 in the

baseband signal processing block was realized in multiple stages comprising three gain control amplifiers 104A, 104B, 104C, and one static gain amplifier 104FX, as in shown in FIG. 12), in the reception period of the frame that is going to be received, on a per stage basis, such that a gain in an earlier stage in the plurality of stages is equal to or greater than a gain in a later stage (Akamine: paragraphs [0043], [0047], [0053]); and

the gain control section performs gain control of the received signal on a per stage basis in the reception period of the frame that is going to be received, using the gains of individual stages set in the gain estimation section (Akamine: paragraphs [0043]-[0044], [0047], [0053], e.g., assuming amplification according to the level diagram in FIG. 12, using the gain control amplifiers 104A to 104C configured as shown in FIG. 6 or FIG. 7).

5. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akamine in combination of Anim-Appiah, in view of Itoh (US 2003/0031135; Cited in IDS).

Regarding claim 13, Akamine in combination with Anim-Appiah discloses the reception apparatus according to claim 11, fails to specifically disclose wherein, when a difference between an average gain of the gains of individual time slots in a reception period of the frame that has been received earlier, and a minimum gain among the gains of individual time slots in the reception period of the frame that has been received earlier, is equal to or greater than a threshold, the gain estimation section estimates the gains of individual time slots of the frame that is going to be received, by excluding a measurement value of the time slot of the minimum gain.

However, in the same field of endeavor, Itoh discloses when a difference between an average gain obtained by averaging said gains and a minimum gain out of said gains is equal to or above a first threshold value in said reception period, said gain estimation section estimates said gain by excluding said measurement value of the time slot with said minimum gain (paragraphs [0049]-[0050]).

Therefore, taking the teachings of Akamine in combination of Anim-Appiah and Itoh as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention by applicant to set a difference between an average gain obtained by averaging gains and a minimum gain out of gains is equal to or above a first threshold value in reception period, gain estimation section estimates said by excluding said measurement value of the time slot with minimum gain for advantages of maintaining output power over a wide input dynamic range.

Regarding claim 14, Akamine in combination with Anim-Appiah discloses the reception apparatus according to claim 11, fails to specifically disclose wherein, when a difference between a maximum gain among the gains of individual time slots in a reception period of the frame that has been received earlier, and a minimum gain among the gains of individual time slots in the reception period of the frame that has been received earlier, is equal to or greater than a threshold, the gain estimation section estimates the gains of individual time slots of the frame that is going to be received, by excluding a measurement value of the time slot of the minimum gain.

However, Itoh discloses when a difference between said maximum gain and the minimum gain out of gains is equal to or above a second threshold value in reception period,

gain estimation section estimates gain by excluding measured value of the time slot with minimum gain (paragraphs [0049], [0050]).

Therefore, taking the teachings of Akamine in combination of Anim-Appiah and Itoh as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention by applicant to set a difference between said maximum gain and the minimum gain out of gains is equal to or above a second threshold value in reception period, gain estimation section estimates gain by excluding measured value of the time slot with minimum gain for advantages of maintaining output power over a wide input dynamic range.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY PHAM whose telephone number is (571)270-7115. The examiner can normally be reached on Monday-Friday; 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vincent P. Harper can be reached on 571-272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Timothy Pham/
Examiner, Art Unit 2617

/VINCENT P. HARPER/
Supervisory Patent Examiner, Art Unit 2617